



Results from a Hawaii Opinion Survey on Genetically Modified Organisms

Carol A. Ferguson, Catherine Chan-Halbrendt, Ania Wieczorek, and Na Wen

In September 2001, the QMark Research and Polling company conducted a telephone survey of Hawaii households for the College of Tropical Agriculture and Human Resources (CTAHR). The survey included questions about residents' knowledge and opinions on genetically modified organisms (GMOs) and their use in different applications, plus basic demographic information on the respondent.

This document summarizes the main findings of the survey. A more detailed discussion of the survey responses was given in a paper presented to the second annual Hawaii International Conference on Business, June 18–22 2002, in Honolulu. That paper also described the various statistical procedures used to analyze the survey responses. The paper is available from the CTAHR Publications and Information Office. To obtain a printed or electronic copy, call (808) 956-7036 or send e-mail to <ctahrpub@hawaii.edu>.

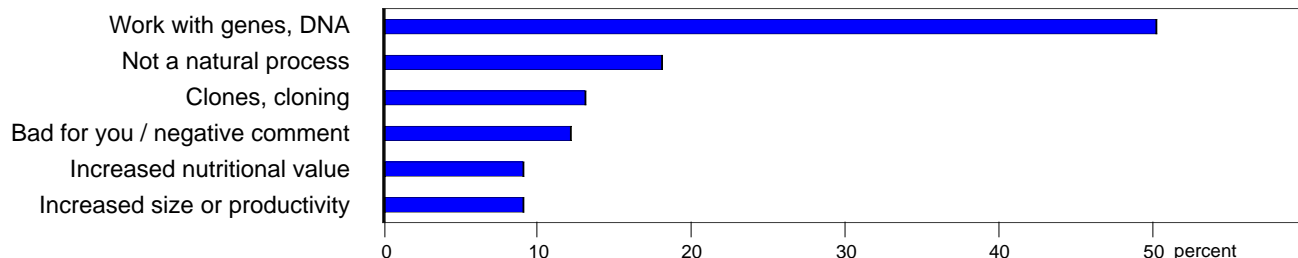
The respondents

In the survey, a total of 525 respondents provided complete information for analysis. The survey respondents represented a cross section of Hawaii residents. About half of those surveyed had heard the term “genetically modified organism” before, and half identified the term GMO with genes.

Survey demographic (525 respondents)

Variable	Percent of sample
Gender	Female 49.9 Male 50.1
Ethnic group	Asian 32.0 Caucasian 30.9 Hawaiian 22.9 Other 14.3
Age	18–25 13.1 26–35 18.5 36–45 22.1 46–55 25.5 56–64 9.5 65 and older 11.2
Minor children in household	Yes 48.0 No 52.0
County of residence	Hawaii 14.3 Honolulu 55.8 Kauai 16.6 Maui 13.3
Educational attainment	Less than high school 3.4 High school graduate 23.6 Some college 33.5 College graduate 19.8 Graduate degree 19.6
Household annual income	Less than \$25,000 14.5 \$25,000–\$50,000 31.6 \$50,000–\$75,000 28.8 \$75,000–\$100,000 13.9 Over \$100,000 11.2

Most common answers about the meaning of the term GMO



Defining GMO

In the survey, the interviewer gave the following definition to describe the term GMO:

“We define genetically-modified food as those produced from plants and animals which have had their genes changed in the laboratory by scientists. All living organisms have genes written in their DNA. They are the chemical instructions for building and maintaining life. By modifying the genes scientists can alter the characteristics of an organism.”

GMO applications on questionnaire

The survey then asked for respondent opinions about 12 specific GMO applications:

- Increase nutritional value
- Increase yield/quantity
- Improve/enhance quality/taste
- Longer shelf life
- Disease-resistance
- Produce pharmaceutical products
- Clean the environment
- Lower the cost of food
- Improve flower attributes such as color, odor
- Application on plants
- Application on animals
- Application on microorganisms (e.g., bacteria)

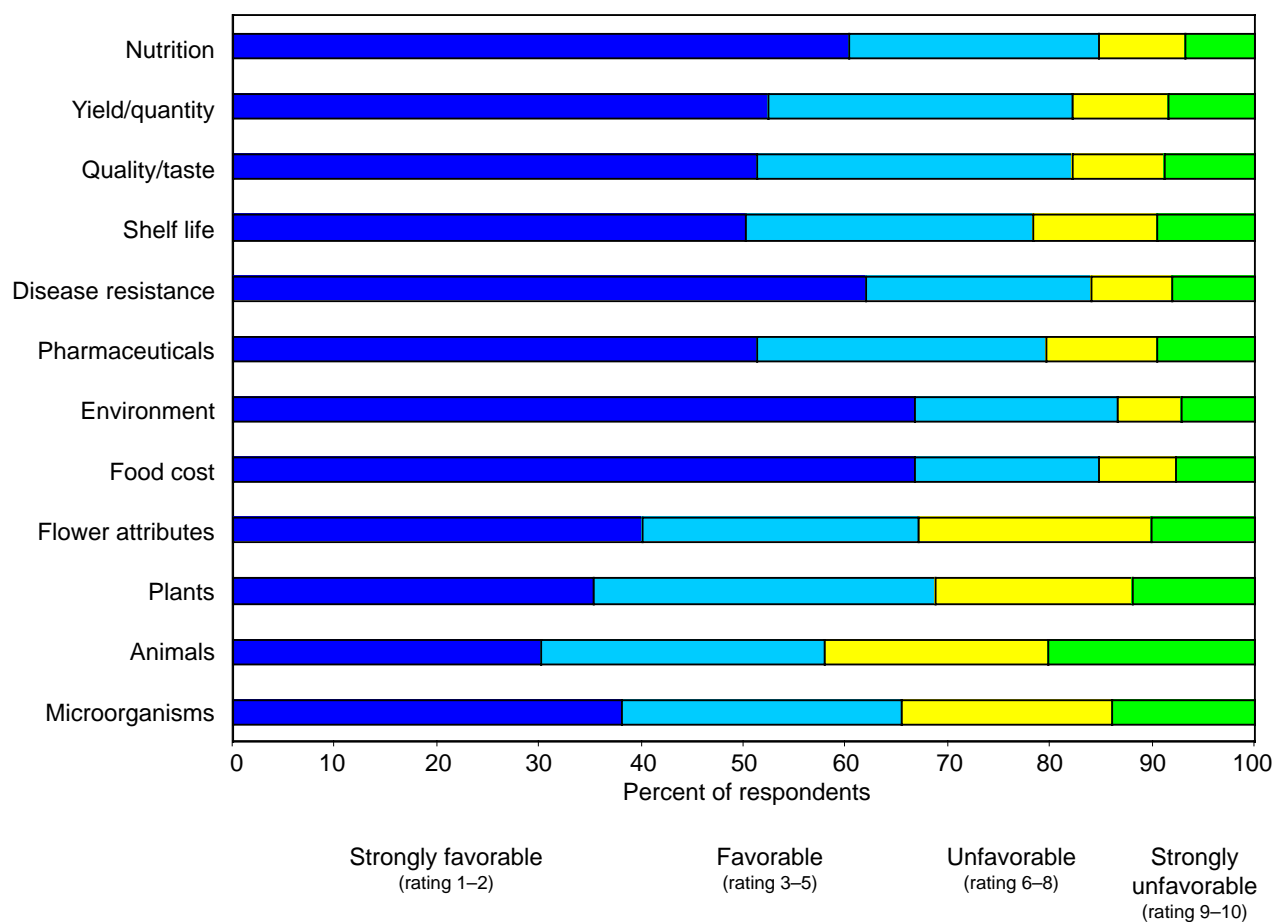
Opinions about GMO applications

Respondents rated their favorability toward different GMO applications on a 1–10 scale. For all 12 applications combined, 43 percent of respondents strongly favored the use of GMO technology, while 5 percent had strongly unfavorable opinions. The chart below shows the separate opinions for each of the 12 applications. Respondents were most favorable toward using GMOs to clean the environment and lower food costs; they were most unfavorable toward GMO application involving animals.

Demographic differences in opinions about the use of GMOs

Statistical tests found that the combined resident opinions about the 12 GMO applications were associated with their demographic background. The charts on pages 4–5 show the opinion ratings broken down by various demographic categories. While the differences were statistically significant, jointly these demographic factors explained a relatively small proportion (less than 4 percent) of the variability in opinions.

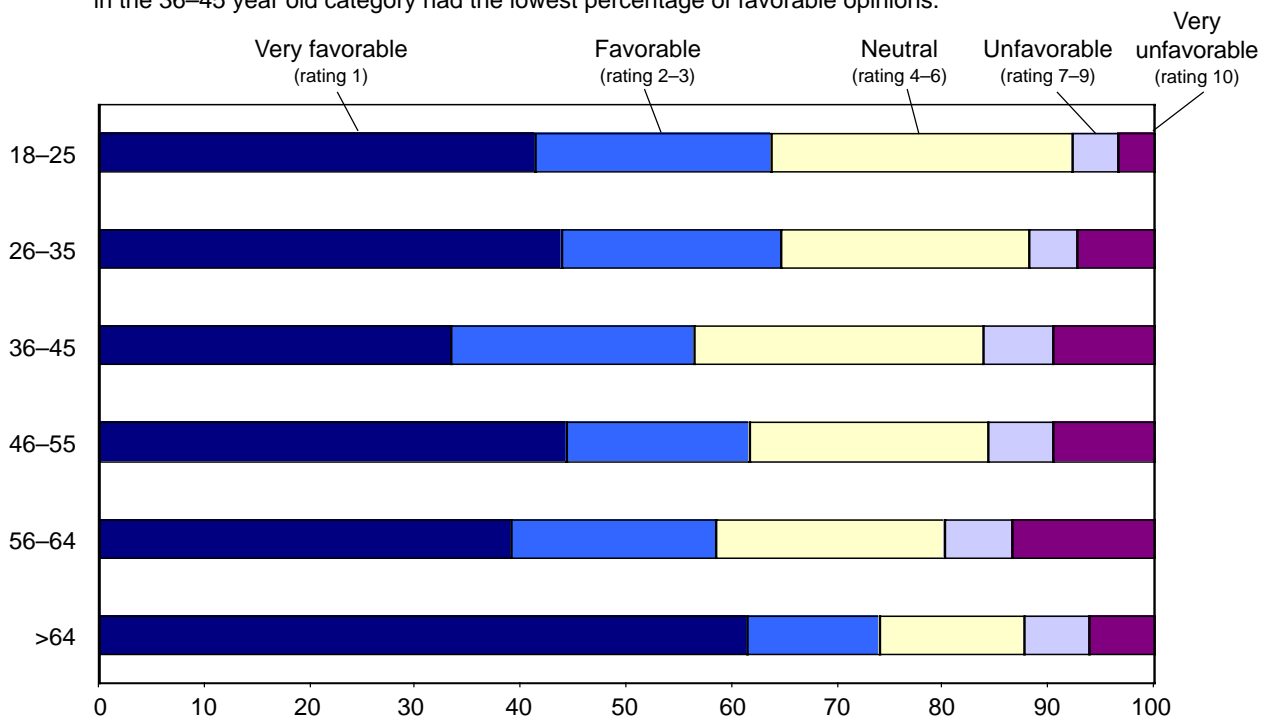
Opinions about the 12 GMO applications



Demographic differences in opinions about the use of GMOs

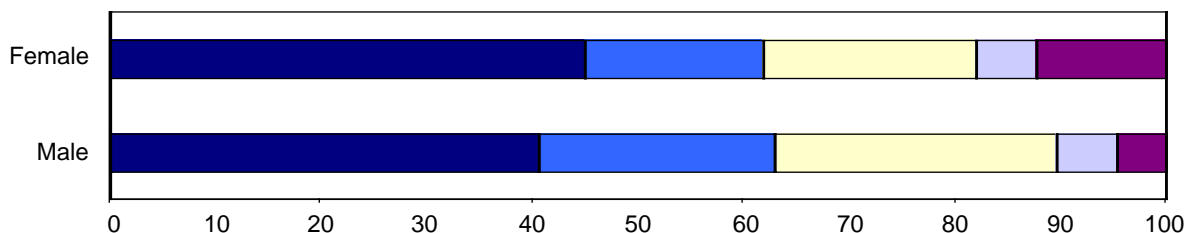
Age

Seniors 65 years and older were the age group most favorable toward GMOs. Survey respondents in the 36–45 year old category had the lowest percentage of favorable opinions.



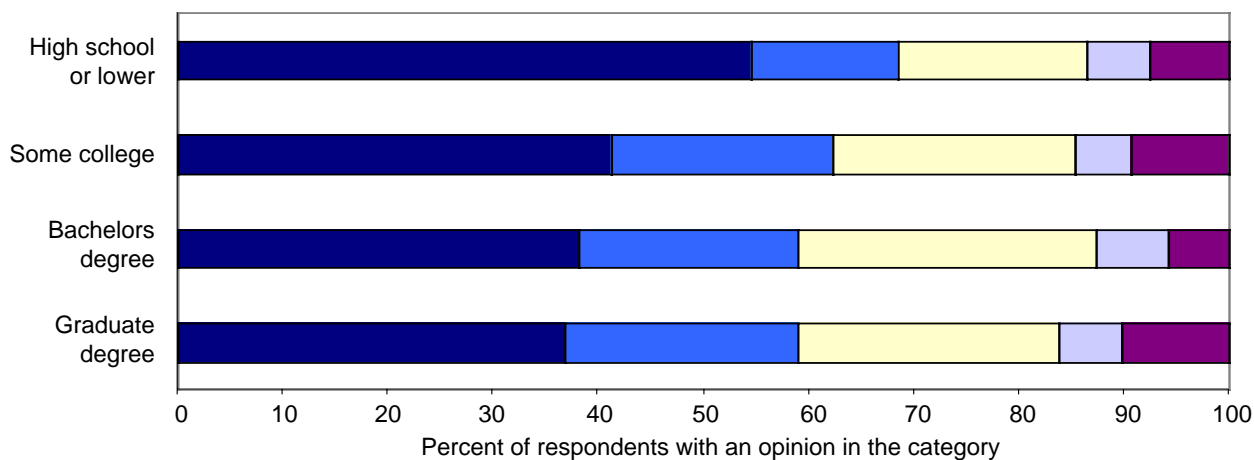
Gender

Women had more very unfavorable opinions toward the 12 GMO applications than men.



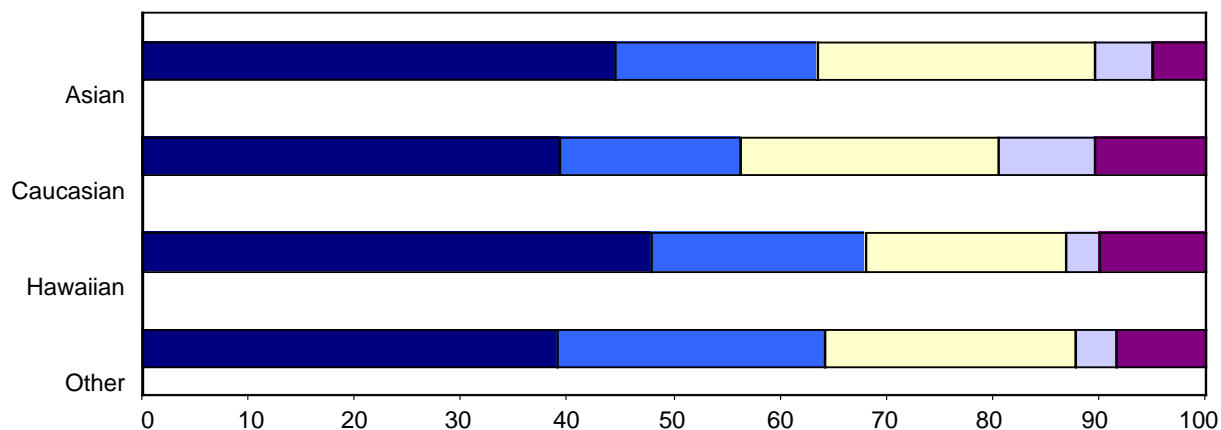
Education

Respondents with a high school education or less were more favorable toward the applications of GMOs, while college graduates were less favorable.

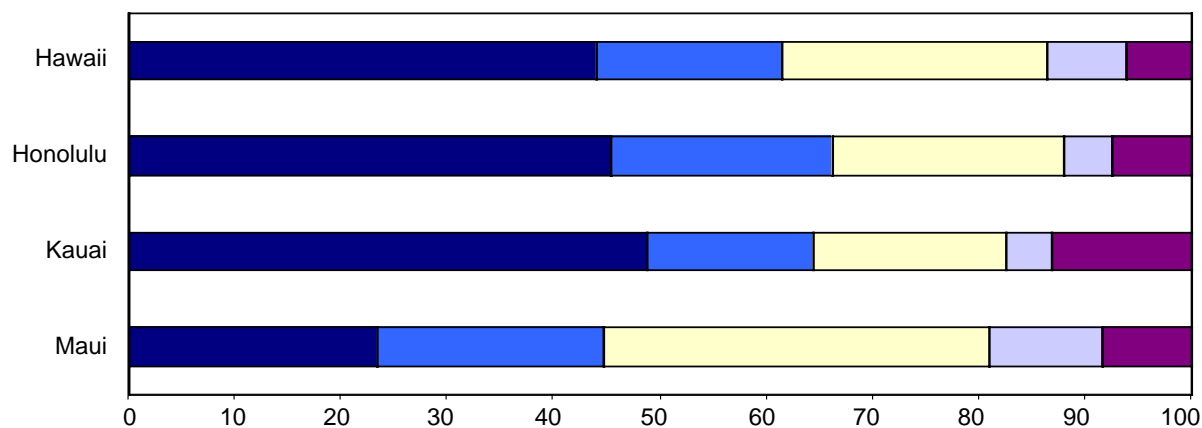


Ethnicity

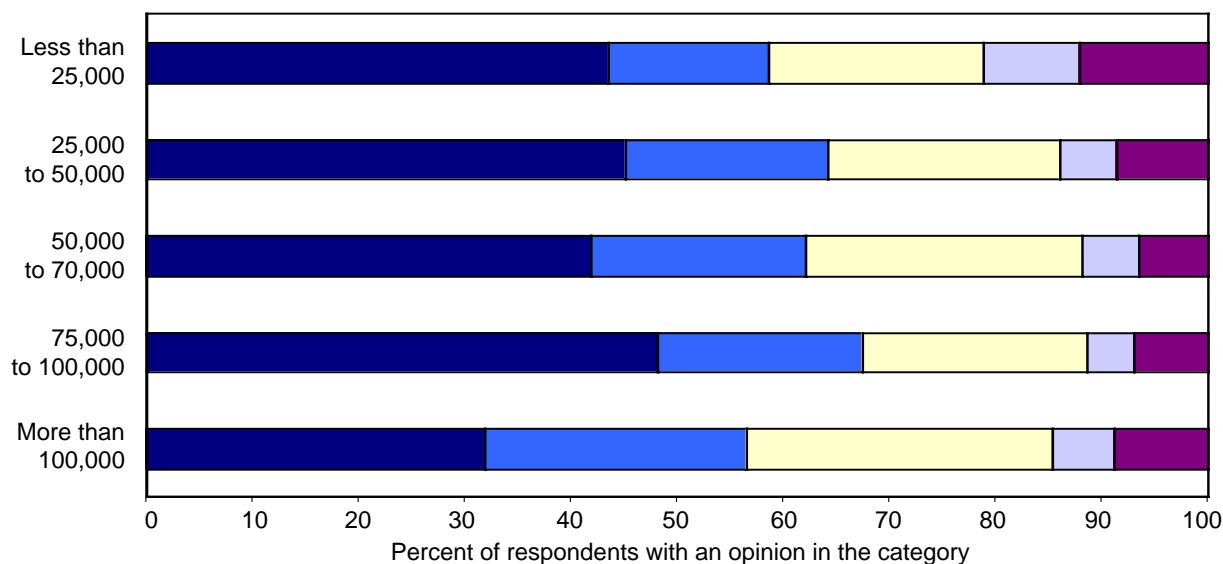
Caucasians were more unfavorable toward GMO applications. Residents that identified with an Asian ethnic group showed the least unfavorable opinions.

**County**

Households living in Maui County had less favorable opinions than those from other counties.

**Income**

Households in the bottom and top income brackets showed less favorability toward GMOs than those in middle-income categories.



Variability in opinions toward different GMO applications

Other analysis investigated whether there were significant differences in the favorability opinions toward the 12 GMO applications in the survey. Statistical tests identified four distinct groupings of GMO applications. These groups are given in the table at right, listed in order of the most to the least preferred group.

Preferences toward GMO uses

Group	GMO applications
Most favored	environment, food cost, nutrition, disease resistance
2nd	yield/quantity, quality/taste, pharmaceuticals, shelf life
3rd	flower attributes, plants, microorganisms
Least favored	animals